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**** WARNING ** WARNING ** WARNING ** WARNING ****
This document is intended for informational purposes only.

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September 22, 2005

02-Sha-299-38.8/48.8
02-0C3504
ACSTP-P299(149)E

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in SHASTA COUNTY IN AND NEAR REDDING FROM ROUTE 273 TO 0.7 KM WEST OF KERN DRIVE.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on October 5, 2005. The original bid opening date was previously postponed indefinitely under Addendum No. 1 dated September 9, 2005.

This addendum is being issued to set a new bid opening date as shown herein and revise the Notice to Contractors and Special Provisions.

In the Special Provisions, Section 10-3.01, "DESCRIPTION," the first paragraph is revised as follows:

"Traffic monitoring stations and modify signal shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications and these special provisions.

In the Special Provisions, Section 10-3.08, "VIDEO IMAGE VEHICLE DETECTION SYSTEM," is added as attached.

To Proposal and Contract book holders:

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the NOTICE TO CONTRACTORS section of the Notice to Contractors and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

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This office is sending this addendum by confirmed facsimile to all book holders to ensure that each receives it. A copy of this addendum and the modified wage rates are available for the contractor's use on the Internet Site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY:

JODY JONES
District 3 Director

Attachment

10-3.08 VIDEO IMAGE VEHICLE DETECTION SYSTEM

This work consists of furnishing and installing a Video Image Vehicle Detection System (VIVDS) for operating traffic signals on all approaches shown on the plans. Work shall include an initial site analysis, set up and system configuration, calibration of the system, performance accuracy verification and training if required.

Arrangements have been made to insure that any successful bidder can obtain the following VIVDS equipment from the manufacturer/supplier, Mori Consultants/Transportation Services, 1481 Rollins Road, Burlingame, CA 94010, Telephone 1-650-343-6100. The price quoted by the manufacturer/supplier for the VIVDS, FOB Destination, Net 30 is \$14,626.00, not including sales tax.

The above price will be firm for orders placed on or before 2/28/06, provided delivery is accepted within 90 days after the order is placed.

DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
VIP 3.1 Video Detection Unit	ea	2	\$2,600.00	\$5,200.00
Two-Channel I/O Card	ea	2	\$300.00	\$600.00
Complete Cameras w/ Motorized Zoom Lenses	ea	2	\$950.00	\$1,900.00
Pelco 3 Foot Riser Mounting Brackets w/ Bell Boxes	ea	2	\$200.00	\$400.00
COMMUNICATIONS				
Vewcom Video Compression Module	ea	2	\$2,600.00	\$5,200.00
US Robotics 56K Phone Line Modem	ea	2	\$135.00	\$270.00
Versa-Link ATX-250 Call Processor (2-ports)	ea	2	\$260.00	\$520.00
OPERATION				
Software and Licenses			Included	Included
HARDWARE/MISC				
Edco Surge Suppressors	ea	2	\$48.00	\$144.00
BNC to 2-Wire Cables	ea	2	\$10.00	\$30.00
Fuse and Neutral Blocks	ea	2	\$10.00	\$30.00
Isotec Video/5-Wire Cable	M	303.03	\$1.32	\$400.00
FREIGHT/SHIPPING/HANDLING			Included	Included
FIELD ENGINEERING AND ACCEPTANCE TESTING MATERIALS			Included	Included
MANUALS/TRAINING SERVICES			Included	Included
			TOTAL	\$14,626.00

The Contractor shall furnish the above listed items or approved equal. If the Contractor chooses to utilize the above listed manufacture model items, then training requirements for State personnel listed hereon shall be deemed unnecessary.

MATERIALS LIST AND DRAWINGS

The Contractor shall submit a proposed list of materials before commencing work and drawings and other data before the completion of the contract. At a pre-construction conference, the Contractor shall provide materials, instructions on installation procedures, and detailed manuals on complete system installation:

- A. Certificate of Compliance** – The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer/supplier and report on the final installed configuration reviewed and approved by the manufacturer's representative or the supplier.. The Certificate of Compliance shall certify the VIVDS conforms with the contract plans and specifications, conforms to the prequalified design and material requirements.
- B. Mounting and Wiring Information** – Provide one set of the approved diagrams detailing wiring and service connections, covered on each side with clear self-adhesive plastic and placed in a heavy-duty plastic envelope. Secure the envelope to the inside of the cabinet door or at a location designated by the Engineer.
- C. Communication Protocol** - Document the unit's communication protocol (message structure organization, data packet length and information necessary to make use of such messages), as well as all information needed for operating the system from a remote Windows based Personal Computer (PC).
- D. Training** – Provide a copy of the training material to the Engineer for approval 30 days prior to the training.

The Contractor shall complete the required analysis and testing and submit the following data before the signal turn-on is scheduled:

- A. Calibration Program** - Provide a PC compatible Compact Disk (CD) that contains set-up and calibration software which observes the vehicular traffic, allows placement of detection zones and adjustment of the detection sensitivity.
- B. Sensor Accuracy Analysis** - Submit to the Engineer a VIVDS accuracy analysis, including original video recordings as well as DVD or CD copies of the video images covering the analysis periods within fifteen days of accuracy testing.
- C. Acceptance Testing Schedule**–Submit an acceptance testing schedule to the Engineer for approval fifteen days prior to acceptance testing of the VIVDS. Acceptance testing shall be separate from the sensor accuracy testing noted in the previous paragraph.
- D. Acceptance Testing Documentation**- Provide documentation necessary to utilize the support equipment that is organized so that the Engineer will be able to perform acceptance testing using the documentation without assistance from the Contractor.

FUNCTIONAL REQUIREMENTS

The VIVDS shall consist of enclosed and environmentally protected Video Image Sensor assemblies (VIS) and mounting hardware assemblies installed on poles or mast-arms as shown on the plans. Includes necessary Video Detection Units (VDU) for image processing, extension modules, cables, connectors and wiring to a State Furnished type 332 traffic control cabinet.

The VIS lens shall be housed in an environmentally sealed enclosure, waterproof and dust tight to NEMA 4 standards. The enclosure shall include a thermostat controlled heater to prevent condensation and assure proper lens operation at low temperatures and an adjustable sun shield with provision to divert water from the sensor field of view. The assembly shall have water tight connections for power, control and video signal cables and wiring.

The VIVDS shall include hardware and software for designing the necessary detection pattern or zones at the intersection or approach. The detection zones shall be created with a keypad or mouse designed to allow a user to configure and calibrate a lane in less than 15 minutes. The zone will flash or change color on a viewing monitor whenever a vehicle is detected.

Include software and firmware that detects vehicle presence, the means to set-up detection zones, test the VIVDS performance as well as view the video scenes and operate the system from a remote location.

The system shall allow the user to define detection zones or elements and to set detection outputs for presence or pulse operation. The number of optically isolated detection outputs shall equal to the detection loops shown on the plans plus one spare output for every approach.

The VIVDS shall support a minimum of two separate detection pattern or zone arrangements that can be automatically enacted by timed schedule from the traffic controller or by a remote operator over a network connection. The system shall detect low-visibility conditions including severe fog and inclement weather and respond by placing selected detection zones into a constant call mode when a video image quality factor falls below user-definable thresholds, for a defined time.. VIVDS outputs shall assume a fail-safe "on" or "call" for presence detection in the event of loss of video signal or power failure and recover from a power failure by restoring normal operation within three minutes without manual intervention. The system shall maintain the configuration and calibration information in memory while powered off for at least 90 days.

The VIVDS shall detect the presence of vehicles at the limit line and loop positions shown on the plans and provide corresponding VIVDS contact outputs to the Model 170E or Model 2070 input files. The system shall detect vehicle presence at the limit line with 98% accuracy for each approach over each one hour test period. The system shall not miss the detecting of more than 3% of the vehicles present and not indicate more than 5% false vehicle readings for any traffic movement. Detected vehicle presence shall be indicated in 0.25 seconds or less of occurrence and the VIVDS shall hold presence for vehicles stopped in a detection zone for up to 255 seconds

The VDU front panel shall have indications for power, communication, presence of video input for each video sensor as well as the real time detector output operation. A test switch shall be provided to allow the user to place either a constant or momentary call for each detector card. Provisions shall be made in software to allow the user to place either a constant or momentary call for each detector card or approach. The indications shall be visible in daylight from 1.5 m away.

A monochrome video monitor with a minimum 229 mm screen shall be included in the 332 cabinet for viewing video detector images and for diagnostic testing. Each VID shall have Video connections that support the NTCS video output format and means shall be included that allow the user to switch to any VID signal at an intersection. System is to allow independent viewing of any scene while video recording any other scene without interfering with the operation of the system outputs. The switcher shall not require the user to physically move the video wires/connectors to view multiple cameras.

The VIVDS shall have a serial communication port that supports sensor unit setup, diagnostics and operation from a local Windows PC compatible laptop or from a remote location with a desktop computer and standard phone modem.

TECHNICAL REQUIREMENTS

System elements shall be designed to operate continuously in an outdoor traffic monitoring and control environment, 24 hours a day. Manufacturing quality and electronic components shall support a minimum mean time between failure (MTBF) of ten (10) years.

The video image sensor (VIS) assembly shall include the video sensor, a zoom lens and weatherproof enclosure. The video sensor shall use a Charged Coupled Device (CCD) element and support NTSC and RS170 video output formats with resolution of not less than 580 horizontal lines. The video sensor shall include an Auto-Gain Control circuit (AGC), have a minimum sensitivity to scene luminance from 0.1 lux to 10,000 lux and produce a usable video image of vehicles, under all roadway lighting conditions and regardless of the time of day. The sensor shall have a motorized lens with variable focus and zoom control with an aperture of f/1.4 or better. The focal length shall allow +/- 50% adjustment of the detection scene.

The enclosed video image sensor (VIS) assembly shall operate from -34oC to +74oC and 0 percent to 95 percent relative humidity, weigh less than 4 kg and present less than 930 sq cm of effective wind surface to any direction.

Sensor unit mounting hardware shall be stainless steel or be treated to withstand 250 hours of salt fog exposure under ASTM-B117 conditions without any visible corrosive damage.

The VDU including image processors, extension modules and video output assemblies shall insert into the controller input file slots using the edge connector to obtain limited 24VDC power and to provide contact closure outputs. Cabling to a "D" connector on the front of the VDU is acceptable. No rewiring to the standards 332 cabinet shall be allowed. The controller cabinet resident modules shall conform to the requirements detailed in Chapter 1 as well as Sections 5.2.8, 5.2.8.1, 5.2.8.2, 5.4.1, 5.4.5, 5.4.5, and 5.4.6, 5.5.1, 5.5.5, and 5.5.6 of the Transportation Electrical Equipment Specifications (TEES)

The VIVDS shall operate from 95 to 135 VAC service per NEMA TS-1. The VIS assembly, excluding the heater circuit, shall draw less than 10 watts of power. Camera assemblies shall derive power by wiring to the type 332 cabinet as directed by the Engineering. VDU's shall interface through the type 332 input file.

Transient protection that complies with IEEE Standard 587-1980 Category C shall be included for all field terminated circuits. Video connections shall be isolated from ground.

Equipment, parts and support equipment required by the Engineer for acceptance testing shall be new and conform with the manufacturer's recommendations. The date of manufacture, as shown by date codes or serial numbers of electronic circuit assemblies, shall not be older than six months from the scheduled start date of this installation. No substitutions of materials shall be allowed that deviate from the list of materials approved by the Engineer.

CONSTRUCTION AND PERFORMANCE TESTING

In the event the proposed equipment has not been previously installed successfully in District 2, the Contractor shall to perform a field demonstration of the VIVDS at a particular site selected by the Engineer. The site will be within the limits of the project and approximate the conditions under which the system will need to operate.. During the demonstration the system must prove it can meet the requirements of these special provisions. The Engineer has the right to reject the material if the demonstration fails to show the device compliant.

Provide personnel skilled in the physical installation of video detection including selection of correct camera locations, the right cabling and connector connection as well as zone design, VIVDS set-up and calibration. A Field Service Engineer from the manufacturer's representative or supplier shall furnish the final installation support and shall be available during system inspection, and alignment, and performance testing.

Provide the number of video image sensors (VIS) shown on the plans. Install the corresponding Video Detection Units (VDU) in a State Furnished Model 170E or Model 2070 controller and cabinet.

Wire each VIS assembly to the controller cabinet with specified cable that includes all power and control wiring as well as coaxial video cable and connect as recommended by the manufacturer/supplier. The cable type and wire characteristics shall meet the manufacturer's recommendations for the respective VIS-to-cabinet distances of the project. Run wiring and cables continuously (without splices) between the VIS sensor junction box and controller cabinet. Coil a minimum of one meter of slack in each pull box and two meters slack in the bottom of the controller cabinet or as directed by the Engineer. Terminate the data communication output conductors at TB-0, and continue for a minimum of three meters to a termination, as directed by the Engineer, for setup, diagnostic, or remote access. Coil and tape the ends of unused and spare conductors to prevent accidental contact to other circuits. Label conductors inside the cabinet for the functions as depicted in the approved detailed diagrams.

Adjust the lens to view 110% of the largest detection area dimension. Create the detection zones or elements to meet the performance requirements of this SSP. Logically combine zones or elements into reporting contact outputs that are equivalent to the detection loops shown on the plans with the detection accuracy required by this specification.

Verify the performance of each unit individually and submit the recorded medium and other materials to the Engineer at the conclusion of the performance test. The accuracy of each unit shall be determined and documented so that each unit may be approved or rejected separately by the Engineer. Failure to submit the materials at the conclusion of testing invalidates the test. The recorded media serves as acceptance evidence and shall not be used for calibration. The calibration shall have been completed prior to testing and verification.

Verify the limit line presence detection accuracy by comparing the VIVDS performance to observations of recorded video images for the same period. Record time stamped video images with superimposed vehicle presence detection and count indication and transfer the images for the selected analysis periods to a DVD or CD media for viewing on a PC. Video record each approach for two sixty minute periods that span dusk and dawn, separately covering the day to night and night to day transitions and including no less than 250 vehicles for each approach and each test period. Provide all software needed for image conversion and analysis. The Contractor shall make a copy of the recording medium for the Contractor's use.

Presence detection accuracy shall be based on the observed operation of the detection contact outputs where such outputs can be logical combinations of several detection zones or elements. Detection errors shall be defined as follows:

#	Error	Description
1	False Detection	When an output reports a vehicle presence when no vehicle is observed
2	Failure to Detect	When a vehicle is present in the zone or at the limit line and the output fails to report a presence
3	Drop After Detection	When a vehicle is initially detected but the output report is dropped while the vehicle remains present.

The presence detection accuracy for an approach shall be determined by the formula $100(1 - \{NE/TC\})$ where TC = the Traffic Count observed from the media recording for the period, and NE = Net Errors observed over the same period. Net errors are obtained by adding the number of observed false calls (error 1 above) while subtracting the number of missed vehicle events and dropped vehicle presence events (errors 2 and 3 above) for each period. The $\{NE/TC\}$ shall be an absolute value. The VIVDS shall not indicate more than 5% in false vehicle readings(error 1 above), not miss the detecting of more than 3% of the vehicles present (errors 2 and 3 above) and the resulting presence detection accuracy shall be at least 98 percent.

The VIVDS vehicle count accuracy shall be determined by the formula $100(1-DC/TC)$ where DC = the Detector Vehicle Count and TC = the Traffic Count observed from the media recording for the period. Vehicle count accuracy shall be better than 95 percent for each test period.

The Engineer will review the data findings and accept or reject the results within 7 days. Determination of any vehicle anomalies or unusual occurrences will be decided by the Engineer. Data or counts that are not agreed upon by the Engineer shall be considered errors and count against the unit's calibration. If the Engineer determines that the VIVDS does not meet the performance requirements, the Contractor will have seven days to re-calibrate and re-test the unit and re-submit new test data. Following three failed attempts, the Contractor shall replace the VIVDS system with a new unit.

ACCEPTANCE TESTING

The Contractor shall notify the Engineer 15 working days before the unit is ready for acceptance testing. Acceptance testing shall be scheduled to be accomplished before the end of the normal work shift. The contractor shall demonstrate that the operation of all VIS cameras and VDU units satisfy the functional requirements of these special provisions.

Provide all equipment, documentation, materials and personnel required for acceptance testing of the system. Provide the Engineer with a spare of any special tools needed for the acceptance testing, operation and maintenance of the system. Provide programming and software required to support the VIVDS system, installed in the appropriate equipment at the time of acceptance testing, and used for the acceptance test.

Unless otherwise allowed in writing by the Engineer, functional testing of electrical systems and signal turn-on will not be scheduled without a successful completion on the acceptance test.

TRAINING

At the Engineer's discretion and in the event the proposed equipment has been previously installed successfully in the District 2, training will not be required. Otherwise, provide a minimum of 8 hours of training by a factory authorized representative for up to 5 students selected by the Engineer. The content of the training shall include instruction on how to align, program, adjust, calibrate and maintain the VIVDS. Provide all materials and equipment for the training. Give the Engineer 15 working days notice prior to the training. The training time and location shall be agreed upon by the Engineer and the Contractor. If no agreement can be reached, the Engineer shall determine the time and location

PAYMENT

Full compensation for training shall be considered as included in the contract lump sum price for modify signal and no additional payment will be made therefor.

Full compensation for technical support by the manufacturer's representative or supplier, including but not limited to, installation, alignment, acceptance testing, and turn-on shall be considered as included in the contract lump sum price for modify signal and no additional payment will be made therefor.

Any trip by the manufacturer's representative or supplier prior to acceptance testing which is necessitated by the Contractor's incomplete or improper installation of equipment will be at the Contractor's expense.